

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 19-16

TUNNEL AND RESERVOIR PLAN

DES PLAINES TUNNEL SYSTEM

ANNUAL GROUNDWATER MONITORING REPORT

FOR 2018

July 2019

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July 26, 2019

Chief
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Illinois Environmental Protection Agency
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Dear Sir or Madam:

Subject: Tunnel and Reservoir Plan, Des Plaines Tunnel System, Annual
Groundwater Monitoring Report for 2018

Attached are three copies of "Tunnel and Reservoir Plan, Des Plaines Tunnel System,
Annual Groundwater Monitoring Report for 2018."

Very truly yours,


Albert E. Cox

Environmental Monitoring and Research Manager
Monitoring and Research Department

AC:OO:cm
Attachment

cc w/att: Ms. Sally K. Swanson (USEPA Region 5 - WC15J) - (2)
Mr. E. Podczewinski
Dr. H. Zhang
cc w/o att: Mr. J. Murray
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**TUNNEL AND RESERVOIR PLAN
DES PLAINES TUNNEL SYSTEM
ANNUAL GROUNDWATER MONITORING REPORT
FOR 2018**

**Monitoring and Research Department
Edward W. Podczewinski, Director**

July 2019

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LIST OF ABBREVIATIONS

°C	degrees Celsius
CCD	Chicago City Datum
CFU	colony forming units
Cl ⁻	chloride
District	Metropolitan Water Reclamation District of Greater Chicago
EC	electrical conductivity
FC	fecal coliform
ft	feet
hr	hour
IEPA	Illinois Environmental Protection Agency
L	liter
m	meter
mg	milligram
mS	millisiemen
NH ₃ -N	ammonia nitrogen
SO ₄ ²⁻	sulfate
TDS	total dissolved solids
Temp	temperature
TOC	total organic carbon

ANNUAL DATA FOR MONITORING WELLS

Introduction

All monitoring wells are located along the 13A extension, south leg, middle leg, and north leg of the Des Plaines Tunnel System ([Figure 1](#)). The monitoring wells were sampled based on the modified groundwater monitoring program for the Metropolitan Water Reclamation District of Greater Chicago's (District) Tunnel and Reservoir Plan (TARP) as briefly described below.

Modified Groundwater Monitoring Program

In a letter dated July 13, 2017, the Illinois Environmental Protection Agency (IEPA) accepted the modifications for the District's TARP groundwater monitoring program effective in January 2017 for a period of three years (2017 – 2019). Under the modified monitoring program, nine wells (QD-27, -29, -30, -31, -33, -34, -36, -46, and -54), which had fecal coliform detected in 10 percent or more of samples during the period 1995 – 2013, will be sampled for four events of TARP tunnel fills, based on the water levels in the TARP following storm events (fill event-based). The criterion that triggers a fill event sampling is that the level of water in the TARP Mainstream tunnels reaches -150 ft Chicago City Datum (CCD). At each event, sampling is done weekly for three weeks. The samples collected during the first week of sampling were analyzed for all parameters in the original monitoring program, including: pH, temperature, electrical conductivity, total dissolved solids, hardness, ammonia, total organic carbon, chloride, sulfate, and fecal coliform. However, the samples from the second and third weeks are analyzed for only fecal coliform. Groundwater elevations in the monitoring wells are measured during each sampling event.

The other 25 wells associated with the Des Plaines Tunnel System are sampled once per year. These wells had fecal coliform detected in less than 10 percent of samples during the period 1995 – 2013.

The monitoring wells QD-43, QD-47, QD-49, QD-55 and QD-58 are either dry or inaccessible. Therefore, these wells are discontinued for monitoring in the modified groundwater monitoring program.

Summary of Data for Monitoring Wells

The analytical data for groundwater sampled during 2018 from fill event-based monitoring wells QD-27, QD-29, QD-30, QD-31, QD-33, QD-34, QD-36, QD-46, and QD 54, along with descriptive statistics, are presented in [Table 1](#). Physical characteristics, such as elevation, groundwater temperature, and estimated time of recharge for each well between initial drawdown and sampling, are also included. The fecal coliform data for groundwater sampled during 2018 from these monitoring wells, along with descriptive statistics, are presented in [Table 2](#). The analytical data for groundwater from 23 wells sampled once per year are presented in [Table 3](#).

FIGURE 1: MAP OF MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM

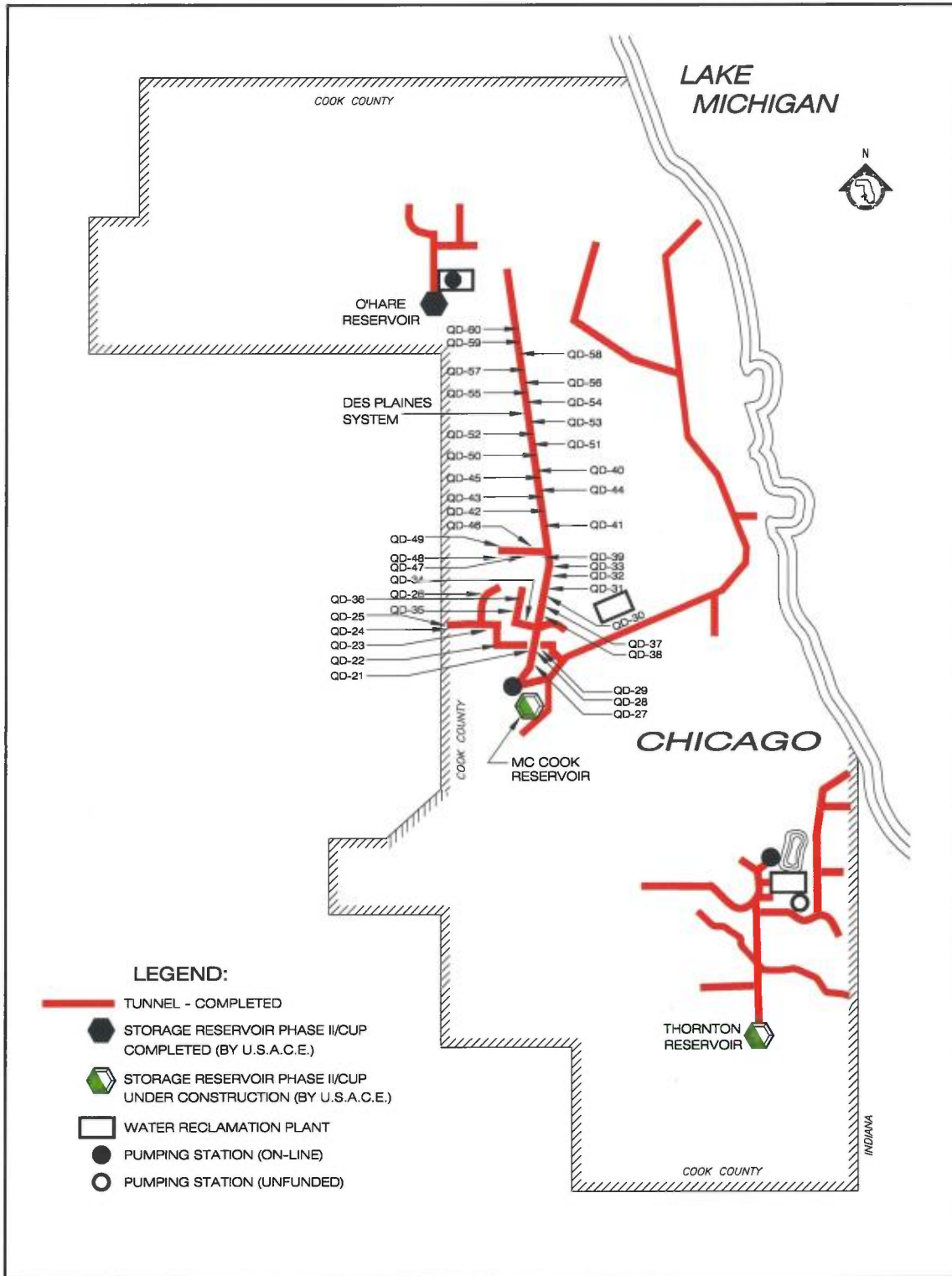


TABLE 1: ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018 AND DESCRIPTIVE STATISTICS OF EACH OF THE CONSTITUENTS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N ¹	Hardness	Temp	Water Elevation ²	Recharge Time
				mS/m	----- mg/L -----					°C	ft	hr	
QD-27	F1	02/22/18	7.0	296	1,490	8.7	579	57	29.3	487	12.3	-46	<48
QD-27	F2	04/19/18	7.2	250	1,282	17.3	467	41	25.0	496	12.4	-168	<48
QD-27	F3	05/17/18	6.8	276	1,584	9.7	528	64	26.8	533	13.0	-86	<48
QD-27	F4	09/06/18	7.2	254	1,116	9.8	449	38	29.8	486	13.0	-159	<48
QD-27	F5	10/10/18	7.1	247	1,308	12.1	445	42	29.4	514	13.8	186	<48
		Minimum	6.8	247	1,116	8.7	445	38	25.0	486			
		Median	7.1	254	1,308	9.8	467	42	26.8	496			
		Mean	7.1	265	1,356	11.5	494	48	27.5	503			
		Maximum	7.2	296	1,584	17.3	579	64	29.4	533			
		Standard Deviation	0.1	21	184	3.5	58	12	1.9	20			
		Coefficient of Variation (%)	2.1	8	14	30.1	12	24	6.8	4			
QD-29	F1	02/21/18	6.5	163	1,028	2.0	161	272	0.5	653	12.9	-74	<4
QD-29	F2	04/18/18	6.8	164	1,014	1.7	156	286	0.4	721	13.1	-78	<4
QD-29	F3	05/16/18	7.1	89	1,104	1.8	168	NRR ³	0.4	697	14.1	-74	<4
QD-29	F4	09/06/18	7.0	155	760	1.7	162	253	<0.5	678	14.1	-69	<4
QD-29	F5	10/10/18	7.0	207	1,324	2.5	332	292	0.5	717	14.0	-66	<4
		Minimum	6.5	89	760	1.7	156	253	<0.5	653			
		Median	7.0	163	1,028	1.8	162	279	0.5	697			
		Mean	6.9	155	1,046	1.9	196	276	0.5	693			
		Maximum	7.1	207	1,324	2.5	332	292	0.5	721			
		Standard deviation	0.2	42	202	0.3	76	18	0.0	28			
		Coefficient of variation (%)	3.5	27	19	17.3	39	6	9.3	4			

TABLE 1 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT IN MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018 AND DESCRIPTIVE STATISTICS OF EACH OF THE CONSTITUENTS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N ¹	Hardness	Temp	Water Elevation ²	Recharge Time
				mS/m	mg/L					°C	ft	hr	
QD-30	F1	02/23/18	6.7	135	926	1.0	123	245	0.3	553	12.3	-59	<48
QD-30	F2	04/19/18	7.0	148	944	1.5	126	260	0.4	620	12.3	-122	<48
QD-30	F3	05/17/18	7.0	156	1,154	1.2	125	314	0.4	650	12.6	-78	<48
QD-30	F4	09/06/18	6.9	141	816	1.2	121	NRR	<0.5	561	12.8	-96	<48
QD-30	F5	10/10/18	7.2	138	832	1.1	111	209	<0.5	539	13.6	-104	<48
			Minimum	6.7	135	816	1.0	111	209	<0.5	539		
			Median	7.0	141	926	1.2	123	253	0.4	561		
			Mean	7.0	143	934	1.2	121	257	0.4	585		
			Maximum	7.2	156	1,154	1.5	126	314	0.5	650		
			Standard deviation	0.2	8	135	0.2	6	44	0.1	48		
			Coefficient of variation (%)	2.2	6	14	15.6	5	17	20.2	8		
QD-31	F1	02/23/18	7.4	188	1,074	2.0	426	70	0.3	281	11.4	15	<48
QD-31	F2	04/19/18	7.5	118	712	1.8	119	135	0.2	213	11.9	-192	<48
QD-31	F3	05/17/18	7.5	84	534	2.6	84	76	0.1	115	12.4	-80	<48
QD-31	F4	09/07/18	7.2	140	738	<1.0	123	174	<0.5	277	13.8	-190	<48
QD-31	F5	10/10/18	7.3	149	896	<1.0	120	137	<0.5	289	12.5	-192	<48
			Minimum	7.2	84	534	<1.0	84	70	<0.5	115		
			Median	7.4	140	738	1.8	120	135	0.3	277		
			Mean	7.4	136	791	1.7	174	118	0.3	235		
			Maximum	7.5	188	1,074	2.6	426	174	0.5	289		
			Standard deviation	0.1	38	204	0.7	142	44	0.2	74		
			Coefficient of variation (%)	1.7	28	26	40.9	81	37	46.3	31		

TABLE 1 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT IN MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018 AND DESCRIPTIVE STATISTICS OF EACH OF THE CONSTITUENTS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N ¹	Hardness	Temp	Water Elevation ²	Recharge Time
				mS/m	----- mg/L -----					°C	ft	hr	
QD-33	F1	02/23/18	8.4	251	1,360	2.1	541	59	0.1	23	11.6	-74	<48
QD-33	F2	04/19/18	8.3	245	1,304	1.3	313	153	0.2	39	12.1	-83	<48
QD-33	F3	05/17/18	8.7	118	788	4.3	128	59	0.1	13	12.8	-116	<48
QD-33	F4	09/07/18	8.1	256	1,316	<1.0	359	189	<0.5	28	12.8	-162	<48
QD-33	F5	10/10/18	8.1	265	1,574	<1.0	362	182	<0.5	43	12.9	-208	<48
			Minimum	8.1	118	788	<1.0	128	59	<0.5	13		
			Median	8.3	251	1,316	1.3	359	153	0.2	28		
			Mean	8.3	227	1,268	1.9	341	128	0.3	29		
			Maximum	8.7	265	1,574	4.3	541	189	0.5	43		
			Standard deviation	0.3	61	290	1.4	147	65	0.2	12		
			Coefficient of variation (%)	3.3	27	23	71.9	43	50	65.5	42		
QD-34	F1	02/23/18	7.1	196	918	15.8	335	53	2.5	378	12.8	-62	<4
QD-34	F2	04/18/18	7.2	156	998	1.9	155	258	2.1	678	12.3	-65	<4
QD-34	F3	05/16/18	7.2	122	752	7.8	141	NRR	1.9	410	13.3	-65	<4
QD-34	F4	09/06/18	6.9	114	600	2.4	117	157	0.6	418	13.5	-64	<4
QD-34	F5	10/10/18	6.9	160	1,036	1.9	154	253	0.5	713	13.2	-64	<4
			Minimum	6.9	114	600	1.9	117	53	0.5	378		
			Median	7.1	156	918	2.4	154	205	1.9	418		
			Mean	7.0	149	861	6.0	180	180	1.5	519		
			Maximum	7.2	196	1,036	15.8	335	258	2.5	713		
			Standard deviation	0.1	33	182	6.0	88	97	0.9	162		
			Coefficient of variation (%)	2.0	22	21	101	49	54	59.7	31		

TABLE 1 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT IN MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018 AND DESCRIPTIVE STATISTICS OF EACH OF THE CONSTITUENTS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N ¹	Hardness	Temp	Water Elevation ²	Recharge Time
				mS/m	----- mg/L -----						°C	ft	hr
QD-36	F1	02/21/18	6.9	158	1,060	1.9	125	299	0.4	689	11.5	-55	<4
QD-36	F2	04/18/18	7.0	131	1,008	1.6	121	301	0.4	735	11.8	-76	<4
QD-36	F3	05/16/18	6.8	167	1,060	3.6	118	NRR	0.4	654	12.1	-77	<4
QD-36	F4	09/06/18	6.9	151	724	5.1	112	184	<0.5	557	14.5	-81	<4
QD-36	F5	10/10/18	6.9	160	1,150	1.8	111	327	<0.5	788	12.5	-83	<4
			Minimum	6.8	131	724	1.6	111	184	0.4	557		
			Median	6.9	158	1,060	1.9	118	300	0.4	689		
			Mean	6.9	153	1,000	2.8	117	278	0.4	685		
			Maximum	7.0	167	1,150	5.1	125	327	0.4	788		
			Standard deviation	0.1	14	163	1.5	6	64	0.0	87		
			Coefficient of variation (%)	1.2	9	16	54.1	5	23	7.3	13		
QD-46	F1	02/23/18	7.9	121	660	1.3	171	73	0.3	109	12.1	-72	<4
QD-46	F2	04/18/18	7.6	95	554	1.2	39	121	0.3	74	12.3	-83	<4
QD-46	F3	05/16/18	7.7	89	546	1.6	36	NRR	0.2	66	12.5	-120	<4
QD-46	F4	09/06/18	7.9	85	394	<1.0	13	136	<0.5	70	12.6	-137	<4
QD-46	F5	10/10/18	7.8	87	550	1.1	11	111	<0.5	99	12.8	-156	<4
			Minimum	7.6	85	394	<1.0	11	73	<0.5	66		
			Median	7.8	89	550	1.2	36	116	0.3	74		
			Mean	7.8	96	541	1.2	54	110	0.4	84		
			Maximum	7.9	121	660	1.6	171	136	0.5	109		
			Standard deviation	0.1	15	95	0.2	67	27	0.1	19		
			Coefficient of variation (%)	1.7	16	18	18.6	123	24	38.4	23		

TABLE 1 (Continued): ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS IN GROUNDWATER FROM FILL EVENT IN MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018 AND DESCRIPTIVE STATISTICS OF EACH OF THE CONSTITUENTS

Well	Fill Event	Sample Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N ¹	Hardness	Temp	Water Elevation ²	Recharge Time
				mS/m	----- mg/L -----					°C	Ft	Hr	
QD-54	F1	02/23/18	9.3	68	388	<1.0	18	133	0.2	30	12.3	1	<48
QD-54	F2	04/19/18	8.2	74	402	1.0	17	153	0.2	32	12.5	-51	<48
QD-54	F3	05/17/18	9.0	74	482	1.0	18	164	0.2	35	12.4	-23	<48
QD-54	F4	09/07/18	8.7	75	1,260	1.2	17	152	<0.5	37	12.4	-49	<48
QD-54	F5	10/11/18	8.8	74	438	1.0	17	154	<0.5	35	12.4	-48	<48
Minimum			8.2	68	388	<1.0	17	133	<0.5	30			
Median			8.8	74	438	1.0	17	153	0.2	35			
Mean			8.8	73	594	1.1	17	151	0.3	34			
Maximum			9.3	75	1,260	1.2	18	164	0.5	37			
Standard deviation			0.4	3	374	0.1	1	11	0.2	3			
Coefficient of variation (%)			4.5	4	63	9.5	3	7	52.2	8			

¹Report limit changed to 0.5 mg/L in July 2018 due to the change in the test equipment.

²Relative to Chicago City Datum (579.48 ft above sea level) at intersection of Madison and State Streets.

³NRR: No reportable result due to QA/QC failure during lab analysis.

TABLE 2: ANALYSIS OF FECAL COLIFORM IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018 AND ITS DESCRIPTIVE STATISTICS¹

Well	Fill Event	Week 1 Sample Date	Week 1	Week 2	Week 3	
----- CFU/100 mL -----						
QD-27	F1	02/22/18	NRR ³	1,400	29	
	F2	04/19/18	17,000	1,100	57	
	F3	05/17/18	>20,000	>20,000	1,200	
	F4	09/06/18	>20,000	2,600	35	
	F5	10/10/18	19	6	10	
		Minimum		19	6	10
		Median		18,500	1,400	35
		Mean ²		3,371	864	59
	Maximum		>20,000	>20,000	1,200	
QD-29	F1	02/21/18	<1	<1	NReq ⁴	
	F2	04/18/18	<1	<1	NReq	
	F3	05/16/18	<1	100	<1	
	F4	09/06/18	4	<1	<1	
	F5	10/10/18	<1	NReq	<1	
		Minimum		<1	<1	<1
		Median		1	1	1
		Mean		1	3	1
	Maximum		4	100	<1	
QD-30	F1	02/23/18	1	3	<1	
	F2	04/19/18	500	130	16	
	F3	05/17/18	14	2,900	210	
	F4	09/06/18	280	12	4	
	F5	10/10/18	<1	<1	NRR	
		Minimum		<1	<1	<1
		Median		14	12	10
		Mean		18	27	11
	Maximum		500	2,900	210	
QD-31	F1	02/23/18	29,000	690	22	
	F2	04/19/18	6,100	9,800	19	
	F3	05/17/18	>20,000	>20,000	120	
	F4	09/07/18	5,700	100	76	
	F5	10/10/18	22	14	21	

TABLE 2 (Continued): ANALYSIS OF FECAL COLIFORM IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018 AND ITS DESCRIPTIVE STATISTICS¹

Well	Fill Event	Week 1 Sample Date	Week 1	Week 2	Week 3
----- CFU/100mL -----					
		Minimum	22	14	19
		Median	6,100	690	22
		Mean	3,384	717	38
		Maximum	29,000	>20,000	120
QD-33	F1	02/23/18	6,800	20	<1
	F2	04/19/18	18,000	220	18
	F3	05/17/18	>20,000	9,400	210
	F4	09/07/18	41	520	46
	F5	10/10/18	1	<1	<1
		Minimum	1	<1	<1
		Median	6,800	220	18
		Mean	631	117	11
		Maximum	>20,000	9,400	210
QD-34	F1	02/23/18	110,000	150	31
	F2	04/18/18	5,900	230	96
	F3	05/16/18	>20,000	3,300	390
	F4	09/06/18	>20,000	98	460
	F5	10/10/18	2	1	<1
		Minimum	2	1	<1
		Median	20,000	150	96
		Mean	3,492	102	56
		Maximum	110,000	3,300	460
QD-36	F1	02/21/18	<1	12	5
	F2	04/18/18	52	6	2
	F3	05/16/18	>20,000	86	41
	F4	09/06/18	>20,000	640	230
		Minimum	<1	2	2
		Median	52	12	5
		Mean	160	24	11
		Maximum	>20,000	640	230

TABLE 2 (Continued): ANALYSIS OF FECAL COLIFORM IN GROUNDWATER FROM FILL EVENT MONITORING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018 AND ITS DESCRIPTIVE STATISTICS¹

Well	Fill Event	Week 1 Sample Date	Week 1	Week 2	Week 3	
----- CFU/100mL -----						
QD-46	F1	02/23/18	4,200	98	1	
	F2	04/18/18	1,200	78	21	
	F3	05/16/18	7,400	2,400	110	
	F4	09/06/18	230	5	2	
	F5	10/10/18	<1	NReq	<1	
		Minimum		<1	5	<1
		Median		1,200	88	2
	Mean		386	98	5	
	Maximum		7,400	2,400	110	
QD-54	F1	02/23/18	<1	<1	NReq	
	F2	04/19/18	1	<1	<1	
	F3	05/17/18	<1	1	<1	
	F4	09/07/18	<1	<1	NReq	
	F5	10/11/18	<1	<1	NReq	
		Minimum		<1	<1	<1
		Median		1	1	<1
	Mean		1	1	<1	
	Maximum		1	1	<1	

¹For values less than minimum and greater than maximum reporting limits, the minimum and maximum reporting limits were used in calculation of descriptive statistics.

²Geometric mean calculated.

³NRR: No reportable result due to QA/QC failure during laboratory analysis.

⁴NReq: Sampling is not required because fecal coliform was below reporting limit in the previous week.

TABLE 3: ANALYSIS OF CHEMICAL AND PHYSICAL PARAMETERS AND FECAL COLIFORM IN GROUNDWATER FROM ANNUAL SAMPLING WELLS IN THE DES PLAINES TUNNEL SYSTEM OF THE TUNNEL AND RESERVOIR PLAN DURING 2018

Well	Sampled Date	pH	EC	TDS	TOC	Cl ⁻	SO ₄ ²⁻	NH ₃ -N ¹	Hardness	Temp	Water Elevation ²	Fecal Coliform
			mS/m	-----mg/L-----							ft	CFU/100 mL
QD-21	07/19/18	6.9	163	1,376	1.0	273	317	<0.5	801	13.5	-54	<1
QD-22	07/19/18	6.6	133	1,002	1.8	141	233	<0.5	726	14.6	-32	<1
QD-23	07/19/18	6.8	177	1,268	1.6	204	352	0.6	865	13.7	-31	<1
QD-24	07/23/18	7.1	94	982	2.6	133	241	0.7	652	12.5	19	<1
QD-26	04/04/18	7.2	84	476	1.3	10	99	0.3	381	11.7	-6	<1
QD-28	06/18/18	7.0	121	818	1.3	147	155	1.2	454	15.9	-98	<1
QD-32	04/04/18	7.7	288	1,824	1.0	528	238	0.1	27	11.9	-219	<1
QD-35	07/23/18	6.7	124	1,006	2.2	96	295	<0.5	688	15.7	-75	<1
QD-37	06/20/18	7.3	196	1,286	1.0	240	362	0.3	357	14.1	-204	<1
QD-38	11/28/18	7.5	101	754	1.7	163	94	<0.5	229	11.9	-209	<1
QD-39	06/20/18	8.3	122	792	<1.0	26	100	0.2	23	11.8	-161	<1
QD-40	11/28/18	9.1	87	736	1.4	16	349	<0.5	23	12.3	-101	<1
QD-41	01/25/18	7.2	93	670	3.3	19	303	0.2	357	11.4	-142	<1
QD-42	01/25/18	7.0	109	722	1.6	19	285	0.3	356	12.1	-136	<1
QD-44	01/25/18	7.6	77	588	1.6	20	209	0.4	318	11.0	-13	<1
QD-48	06/20/18	8.7	68	484	1.3	8	247	0.2	190	13.6	-181	<1
QD-50	04/11/18	9.3	98	662	1.6	12	262	0.2	13	12.0	-148	<1
QD-51	04/11/18	9.2	87	522	1.8	15	115	<0.1	5	11.8	-117	<1
QD-52	04/11/18	9.2	74	488	2.2	17	139	0.1	14	13.7	-128	<1
QD-56	11/28/18	8.8	35	292	1.0	10	11	<0.5	52	11.2	-74	<1
QD-57	12/11/18	8.4	43	340	<1.0	13	52	<0.5	16	10.7	-114	85
QD-59	11/28/18	8.5	86	348	1.0	67	15	<0.5	218	10.9	-45	<1
QD-60	11/28/18	8.2	42	410	<1.0	42	101	<0.5	241	11.2	-98	<1

¹Reporting limit changed to 0.5 mg/L in July 2018 due to the change in the test equipment.

²Relative to Chicago City Datum (579.48 ft above sea level) at intersection of Madison and State Streets.